Impact-Based Decision Support Services Training: Retooling the NWS to Build a Weather Ready Nation

Jennifer McNatt (Southern Region ROC)
Paul Kirkwood (Team Co-Lead)
Joshua W. Scheck (Team Co-Lead)

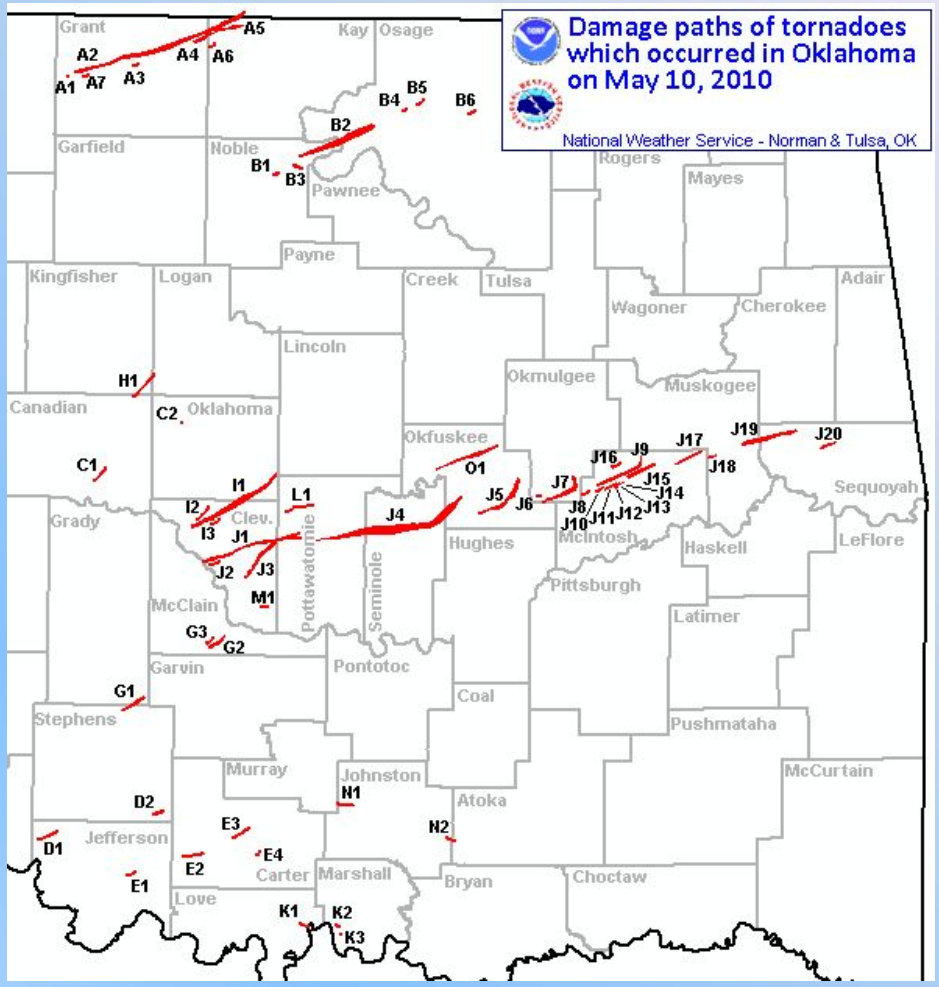
December 16, 2015

Topics

- History of Tools and Service Need
- Combining Two Innovations
- Integrating with the Damage Assessment Toolkit and Case Example

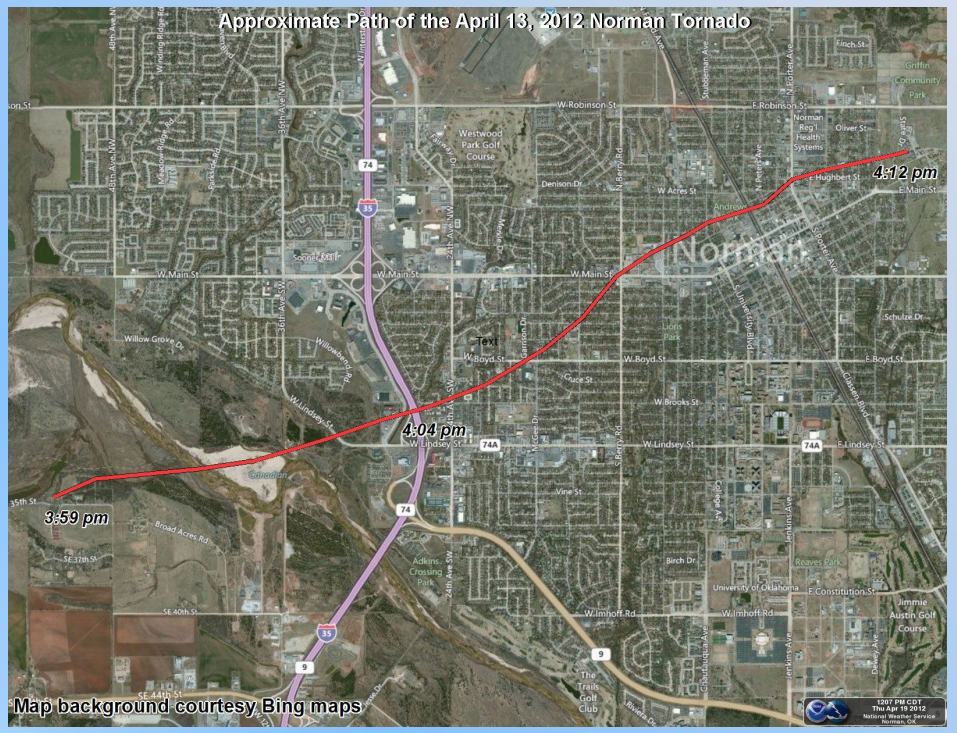
History of Producing a Preliminary Tornado Track

May 10, 2010



History of Producing a Preliminary Tornado Track

- May 2011 – Tool developed in AWIPS
- April 13th, 2012 – First test in the city of Norman



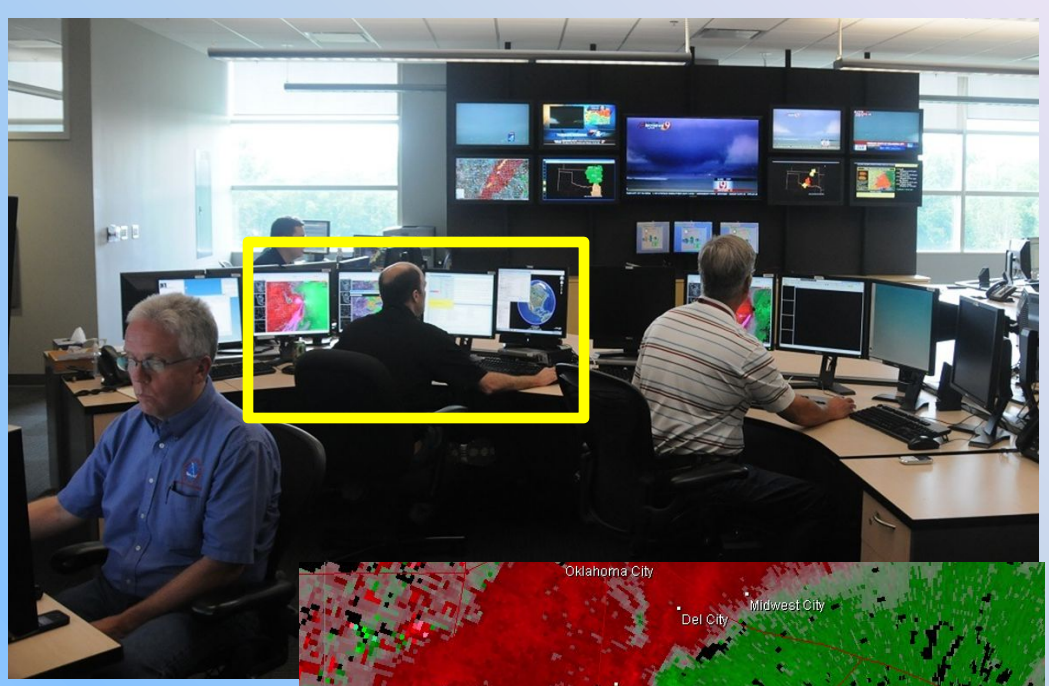
History of Producing a Preliminary Tornado Track

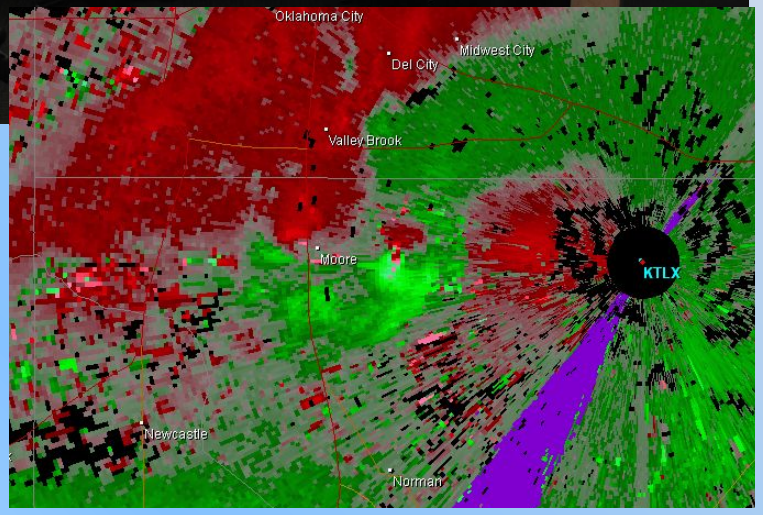
"It was very useful for us at the City of Norman EOC as well as the Command post. One of the things that was particularly valuable for me personally was having the peace of mind that the entire storm track was indeed searched twice allowing our personnel to avoid unnecessary operations in the dark. Additionally, we were able to establish traffic routes for emergency response, the Red/White game on Saturday, determining the alternate long term shelter location and verifying reports from the community."

- James Fullingim, Norman Fire Chief

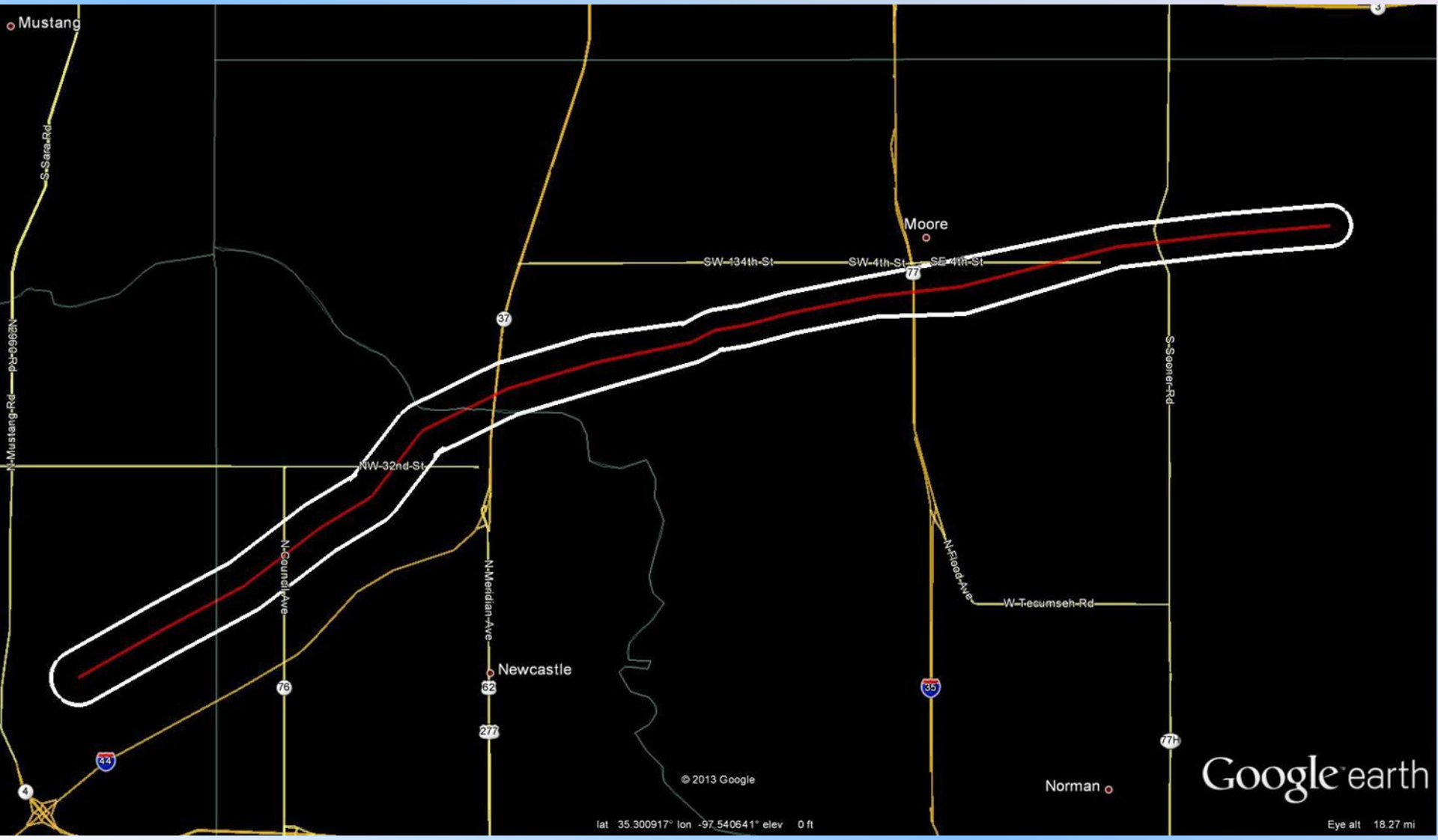
History of Producing a Preliminary Tornado Track

- Manually created
- Base radar data
- For first responders
  - Law enforcement
  - Fire
  - EMS
  - Hospitals
  - Relief agencies
  - Etc





Preliminary Path vs Damage Survey
May 20th, 2013 Moore Tornado



Preliminary Path vs Damage Survey
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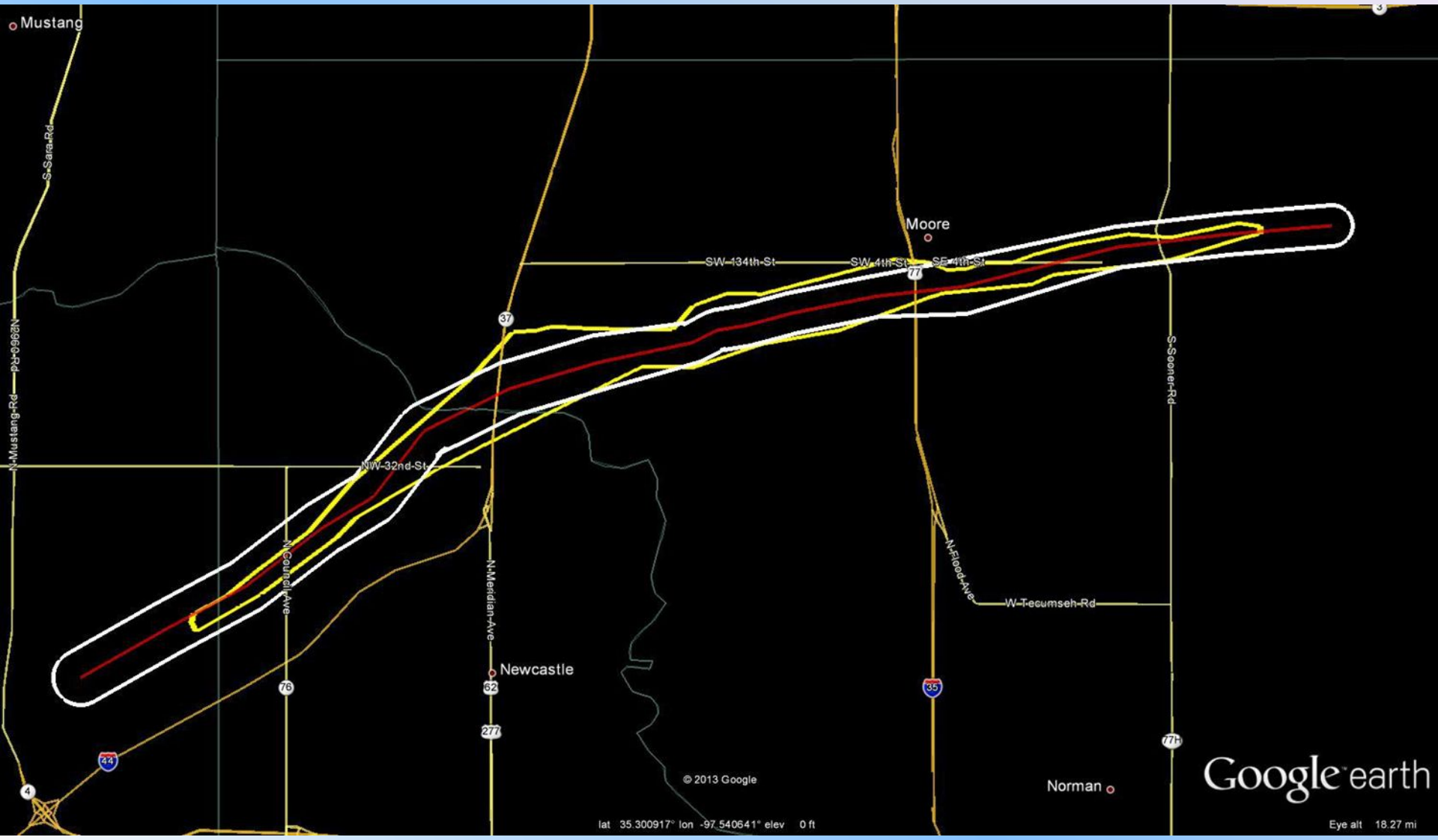
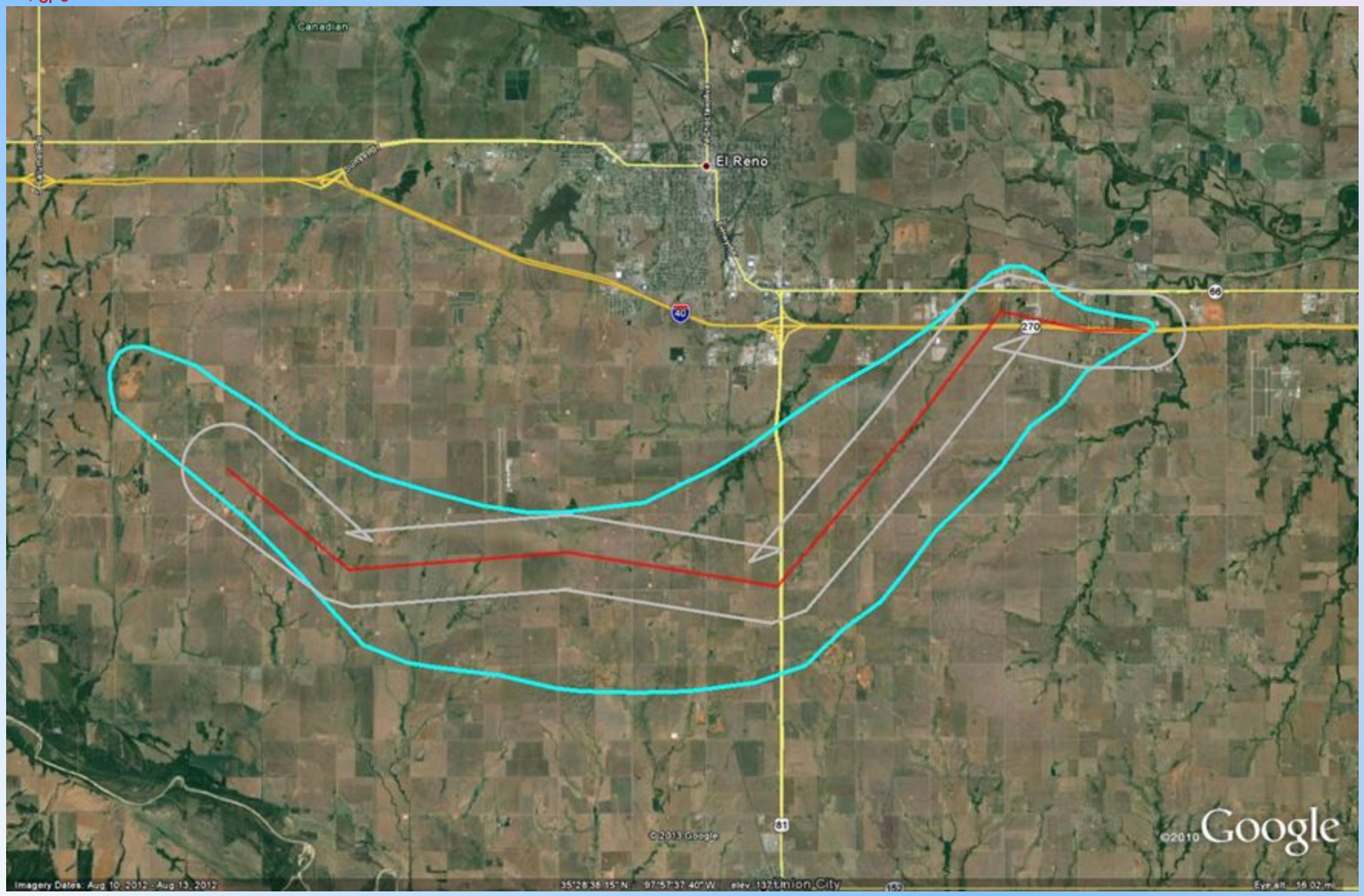


Preliminary Path vs Damage Survey
May 31st, 2013 El Reno Tornado



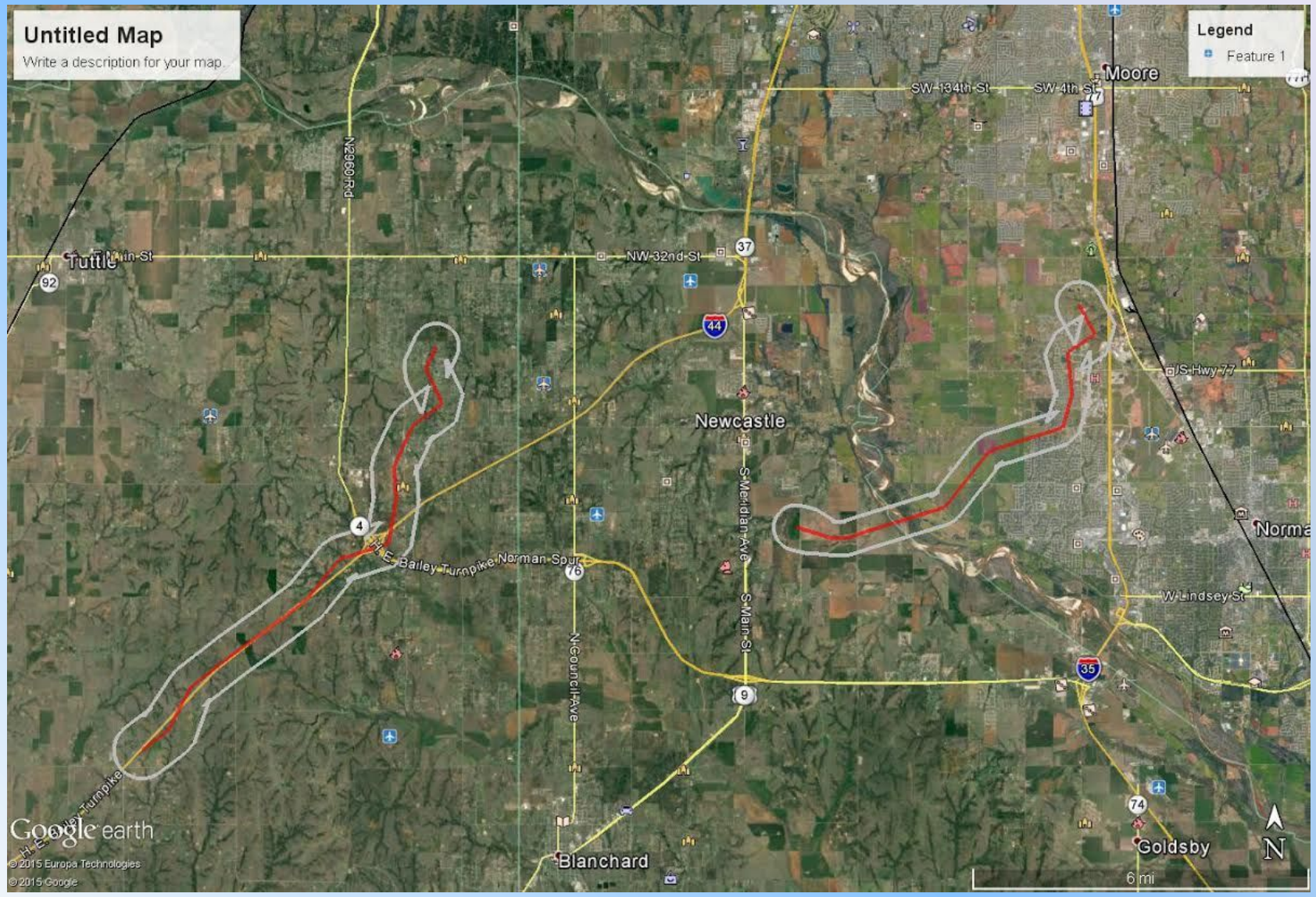
FEMA Tie-In

- SR ROC deployed to FEMA VI for Moore event
- Passed along track to FEMA GIS
- Used to deploy additional USAR teams to Moore ahead of request

FEMA Request

- Target date of March 31, 2015
- GIS shapefile containing an initial, best estimate polygon of potential tornado damage
- Threshold: “Significant” Event
  - Damage
  - Fatalities
  - National Media Attention
- Timing: 30 minutes to 1 hour after event

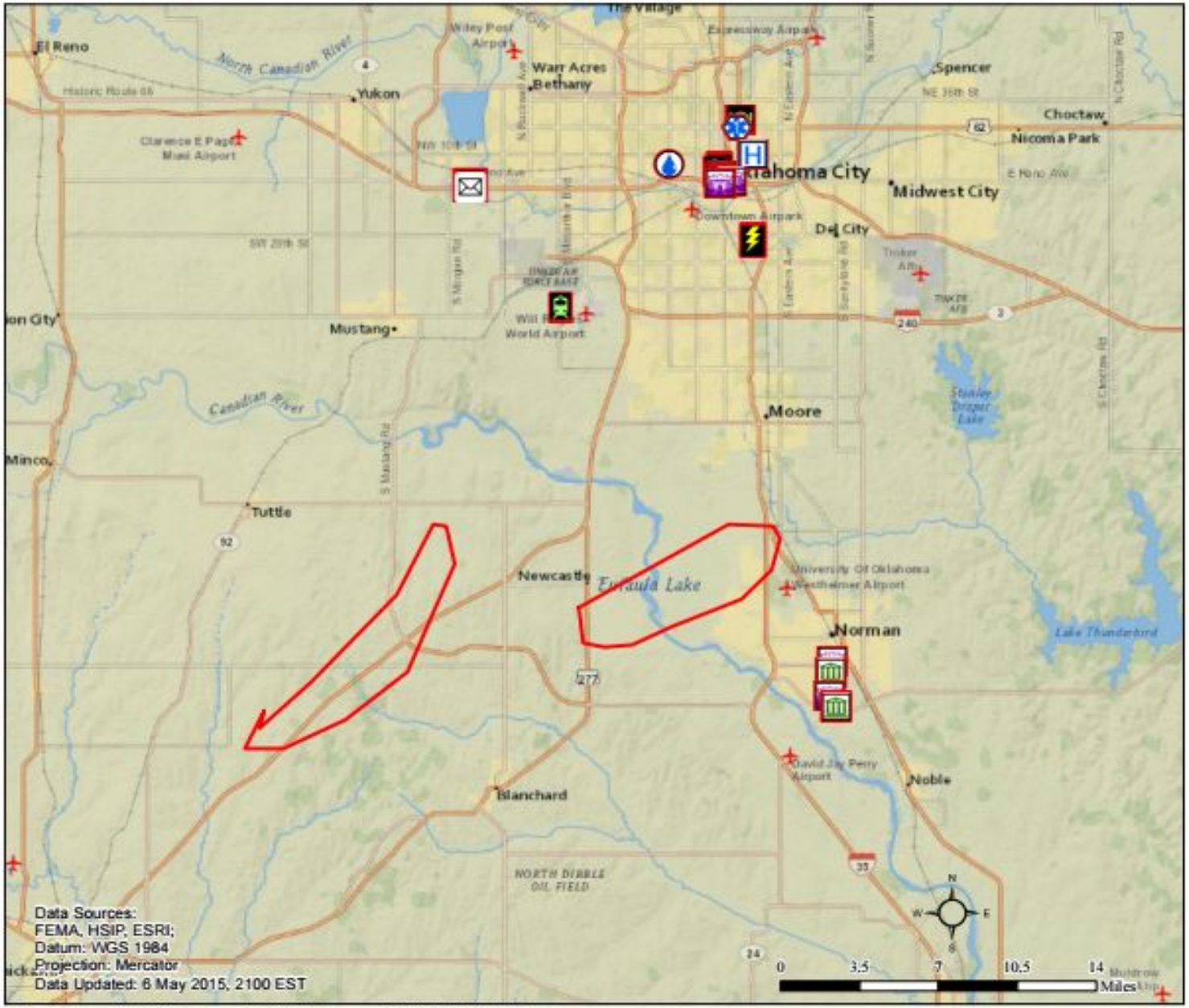
May 6, 2015


Untitled Map
Write a description for your map.
Legend
Feature 1
Moore
SW 134th St
SW 4th St
N 2960 Rd
Tuttle
Main St
92
NW 32nd St
37
44
US Hwy 77
Newcastle
S Meridian Ave
S Main St
4
H.E. Bailey Turnpike
Norman Spur
76
W Lindsey St
N Council Ave
35
9
74
Goldsby
Blanchard
N
6 mi
Google earth
© 2015 Europa Technologies
© 2015 Google

Tornado Hazard Map: (06 May 2015, 2100 EST)

Preliminary Path, South of Oklahoma City, OK

FEMA



Data Layer / Map Description:
Overview of the area affected by the event.
Tornado path as reported by NOAA/NWS Storm Prediction Center as of 06 May, 2015 2030 EST

Estimated Affected Population: 10,200
Estimated Affected Housing Units: 3,770

- Tornado Path

DHS Infrastructure Asset List (IAL) Points

SECTOR

- Agriculture and Food
- Commercial Facilities
- Communications
- Emergency Services
- Energy
- Government Facilities
- Healthcare and Public Health
- Postal and Shipping
- Transportation
- Water

What it Can be Used For

- Local Response
  - How do responders prioritize resources?
  - Does the response exceed local resources?
- State
  - What additional resources might be needed?
- Regional (Federal)
  - What additional resources might be needed?
- National (Federal)
  - What additional resources might be needed?

Combining Two Key Innovations

Navigating the new NWS Structure

Two Damage Path Tools

- NWS Norman tool (written by Aaron Anderson
  - Based in AWIPS
  - Validated by Doug Speheger research that showed 87% of tornado damage was within a “range of uncertainty” defined as a function of TVS range from radar.
  - Outputs shapefile

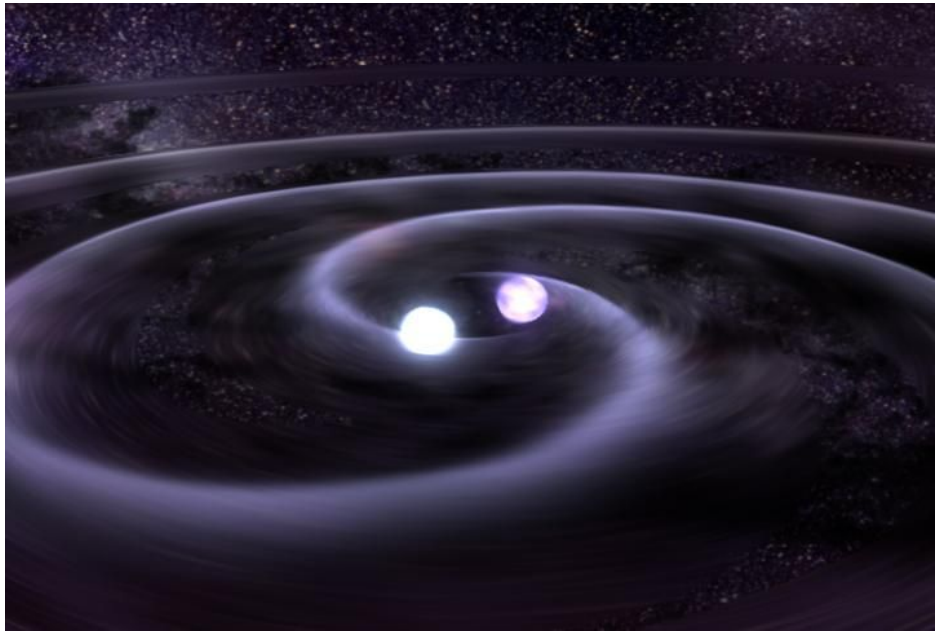
Two Damage Path Tools

- NWS Central Region tool (written by Brian Walawender)
  - Web-based (accessible via VPN if deployed)
  - Overlays of MRMS rotational tracks
  - Allows freehand drawing of damage paths
  - Calculates infrastructures impacted
  - Useful for any size damage path (hail, fire, derecho, etc.)

Enter the New NWS

- Based on FEMA leadership feedback, establish this service
  - Later became a formal requirement from FEMA

- STI Project Goals:
  - Merge innovative damage path tools into one standard
  - Harness strengths of available damage path tools
  - Make tools available in both AWIPS and Thin Client
  - Disseminate the tool output to DAT



Three Iterations

- Prototype freeform polygon (hidden in AWIPS OB 15.1.1
  - Lacked functionality of NWS Norman version
- Enhanced freeform polygon and basic damage path from baseline tool (hidden in AWIPS OB 16.1.1)
  - Baseline tool clunky and some database/DAT interaction concerns
- Full version expected for AWIPS OB 16.2.1 (April 2016)
  - Will have:
    - Standardized damage types
    - Smooth export to DAT
    - More efficient tool use
  - WDTD training will roll out at same time

DAT (Damage Assessment Toolkit)

- Why use the DAT Infrastructure?
  - This allows FEMA and First Responders to utilize the same resources
    - Same System for Preliminary Tracks as Official Tracks
    - Separate Services (Official open, Preliminary closed and password protected)
  - Additional Information being added to the Preliminary Track information (Additional Information Coming)
- FY2017/2018 DAT is moving to NCO (IDP)

DAT (Damage Assessment Toolkit)

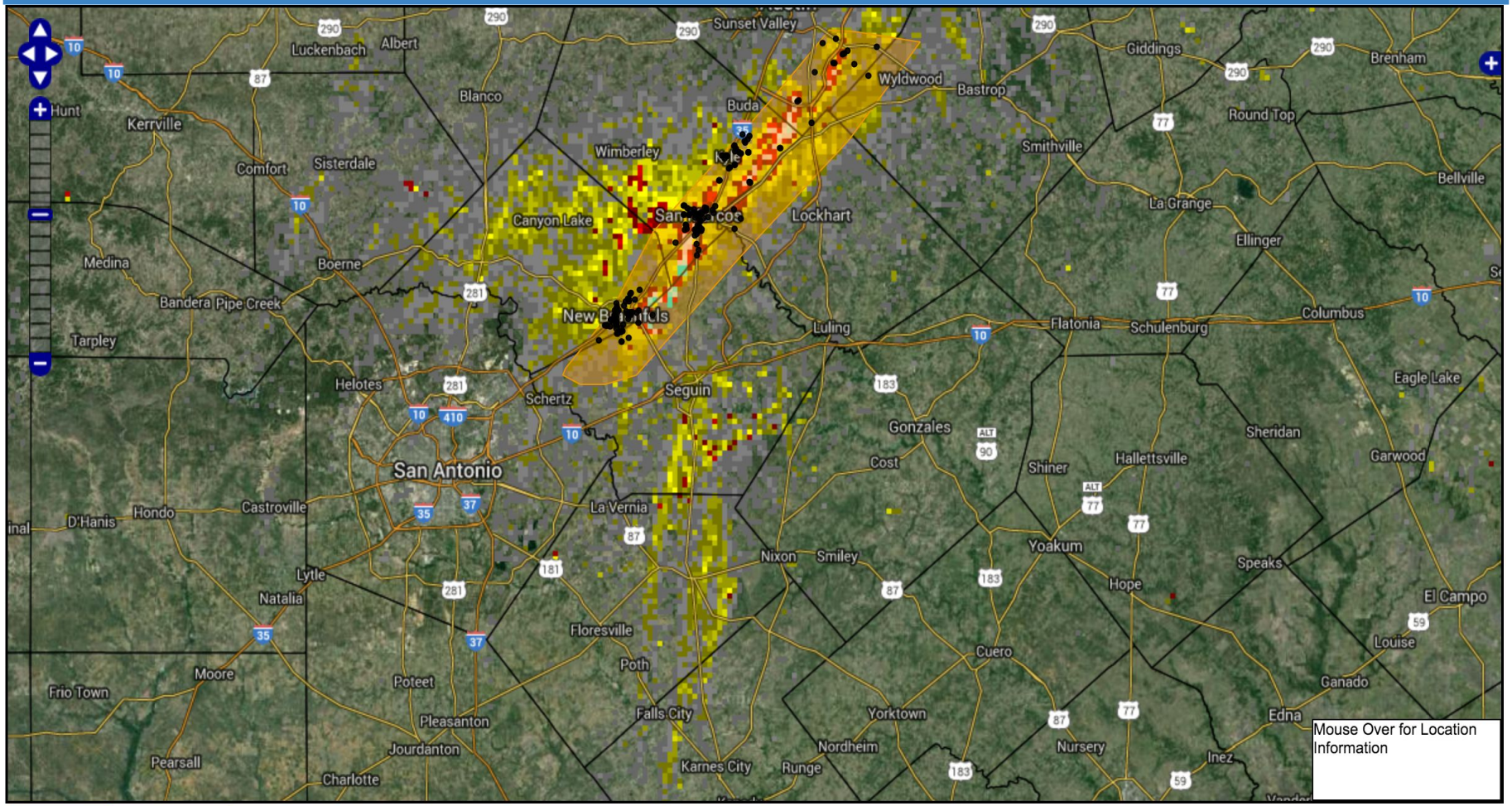
- How do we get Access to the Prelim Track Services?
  - Mini-HowTo for DPT Available (One Pager)

HOW FEMA ACCESSES POLYGONS

1. Login at https://services.dat.noaa.gov/arcgis/rest/services/DamageAssessmentToolkit/DamageFEMAPrelim/MapServer
2. Click on **ArcGIS.com Map**
3. Zoom to area of concern

- Contact your appropriate ROC for access to the protected Site
- To create Prelim Paths:
  - Use the CRH Damage Path Tool or
  - AWIPS II Damage Path Tool (16.2.1)
    - Training Coming with AWIPS 16.2.1 (WDTD)

Some Examples (DPT/DAT)



Pan/Zoom | Draw Polygon | Get Data | Clear Map | Send to DAT Server

KML Download - http://intra.crh.noaa.gov/impact/kml/damage_103020151532.kml
Shapefile Download - http://intra.crh.noaa.gov/impact/kml/damage_103020151532.zip

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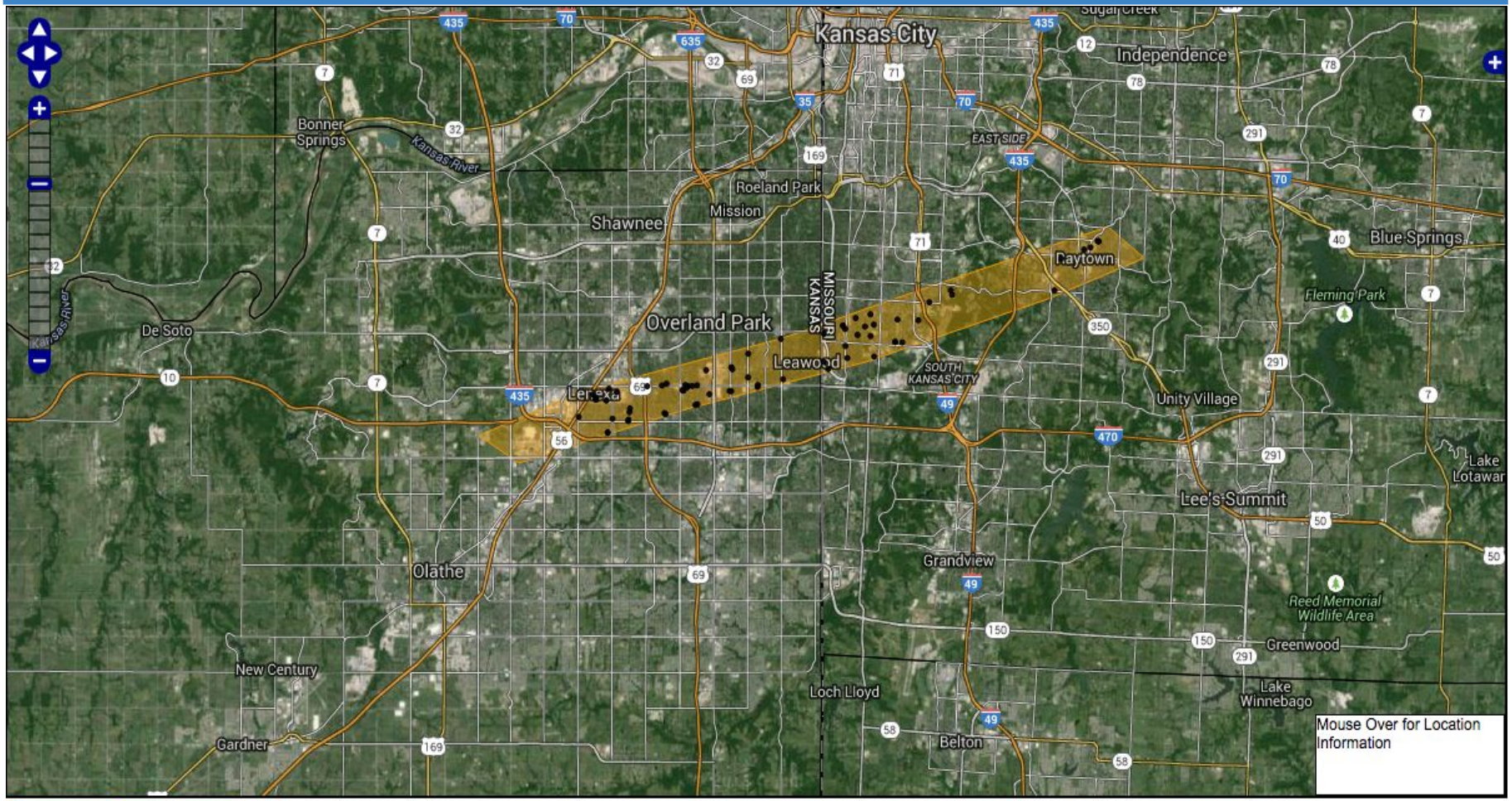
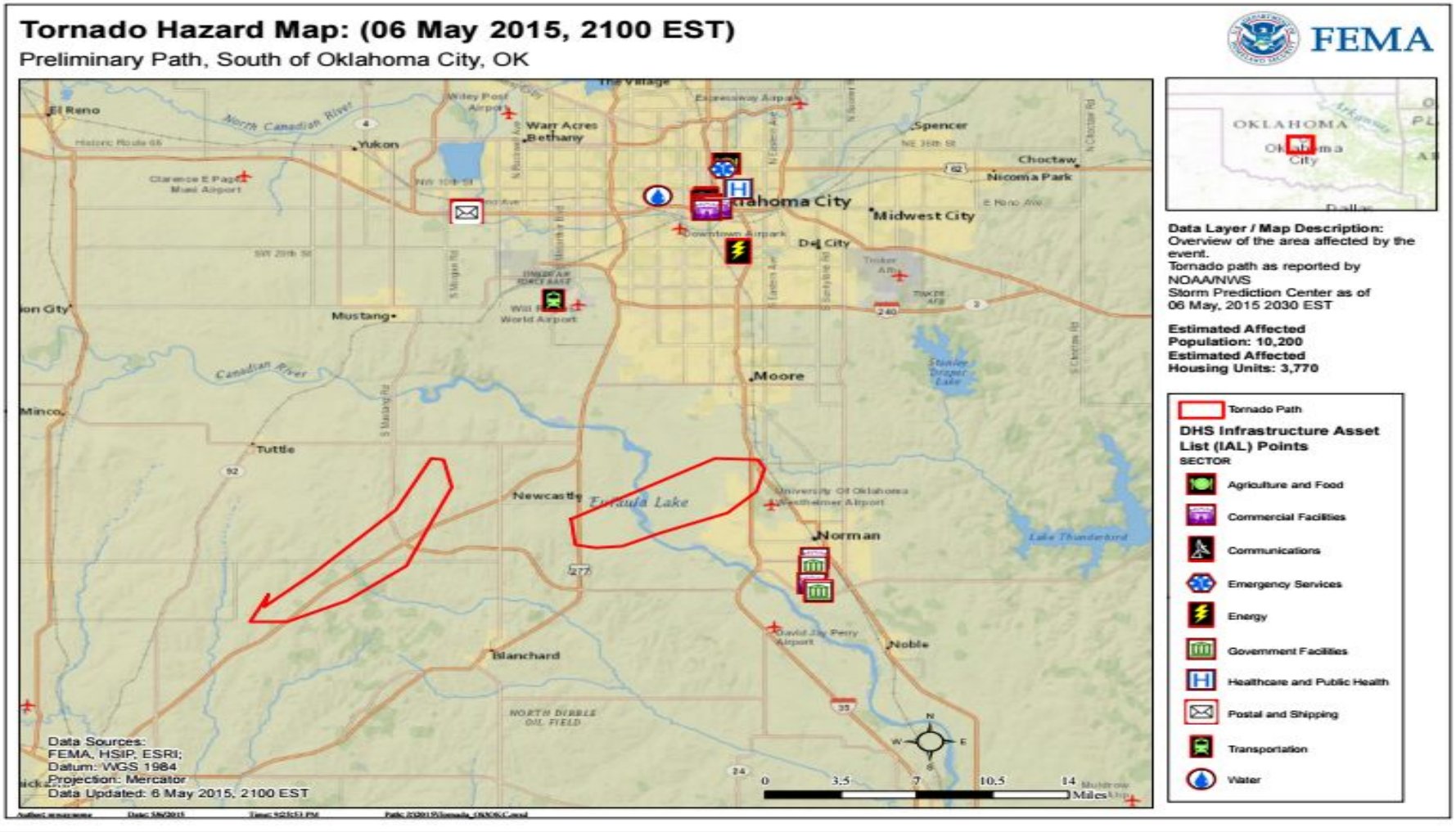


FEMA (DPT/DAT)


Tornado Hazard Map: (06 May 2015, 2100 EST)
Preliminary Path, South of Oklahoma City, OK
FEMA
El Reno
Yukon
Warr Acres
Bethany
Spencer
Choctaw
Nicoma Park
Midwest City
Mustang
Moore
Tuttle
Newcastle
Norman
Noble
Blanchard
Canadian River
North Canadian River
Lake Thunderbird
Data Sources:
FEMA, HSIP, ESRI;
Datum: WGS 1984
Projection: Mercator
Data Updated: 6 May 2015, 2100 EST
0 3.5 7 10.5 14 Miles
OKLAHOMA
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Postal and Shipping
Transportation
Water

Thank you.

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